

WHAT IS CLAIMED IS:

1. An imaging device comprising

a wide-angle high distortion optical system having an optical characteristic that an image of an object is projected in larger magnification in the central area of the image than in a peripheral area and that distortion is larger in the peripheral area than in a central area of the image formed by the optical system;

an image capturing section for capturing the image data formed by the optical system in a stand-by mode for waiting for intrusion of an object, and in a close-observation mode for taking a picture of the object while tracking the object; and

an image data generating section for generating, in the close-observation mode, a central image data representing an image of the central area of the image projected on the image capturing section by the optical system.

2. An imaging device according to claim 1

wherein, in the stand-by mode, the image data generating section extracts the central image data and an image data representing at least a part of the image in the peripheral area such that an image of a wide area is formed.

3. An imaging device according to claim 2 wherein the image data generating section generates an image data representing a compound image wherein the central area image and the wide area image are compounded.

4. An imaging device according to claim 2 further comprising an image data processing section for processing the central image data such that the central image is displayed in an enlarged form and processing the wide area image data such that the wide area image is displayed with less distortion.

5. An imaging device according to claim 1 further comprising a memory for storing the central image data generated by the image data generating section.

6. An imaging device according to claim 5 wherein the image capturing section includes two-dimensionally arranged pixels, the memory stores data of a plurality of pixel position conversion patterns, and the image data generating section selects data of one of the pixel position conversion patterns and generates the image data using the selected pixel position conversion pattern.

7. An imaging device according to claim 5 further comprising an identifying data adding section for adding, to the central image data, an identifying data for identify the central image data to be stored in the memory.

8. An imaging device according to claim 1 further comprising a control section for switching an operation mode of the imaging device between the stand-by mode and the close-observation mode.

9. An imaging device according to claim 8 further comprising an object detecting section for detecting a specified object based on the image data captured by the image data capturing section in the stand-by mode, and wherein the control section switches the operation mode of the imaging device to the close-observation mode when the object detecting section detects the specified object.

10. An imaging device according to claim 8, wherein the control section switches the operation mode of the imaging device to the stand-by mode when a predetermined ending condition is satisfied in the close-observation mode.

11. An imaging device according to claim 8, wherein the control section control the image capturing section to generate the image data at intervals shorter in the close-observation mode than in the stand-by mode.

12. An imaging device according to claim 1 further comprising a communication section for communicating with an external device, and a communication control section for transmitting the central image data to the external device through the communication section.

13. A monitoring system comprising;
a imaging device including

 a wide-angle high distortion optical system having an optical characteristic that an image of an object is projected in larger magnification in the central area of the image than in a peripheral area and that distortion is larger in the peripheral area than in a central area of the image formed by the optical system;

 an image capturing section for capturing the image data formed by the optical system in a stand-by mode for

waiting for intrusion of an object, and in a close-observation mode for taking a picture of the object while tracking the object; and

a first image data generating section for generating, in the close-observation mode, a central image data representing an image of the central area of the image projected on the image capturing section by the optical system;

a controller including a display; and

a communicating section for enabling communication between the imaging device and the controller, the display of the controller displaying the image of the central area when the central image data is transmitted from the imaging device to the controller through the communicating section.

14. A monitoring system according to claim 13 wherein the image data generating section includes two-dimensionally arranged pixels, and the image data processing section generates the central image data using a predetermined pixel position conversion pattern.

15. A monitoring system according to claim 13

wherein the imaging device further includes a memory for storing data of a plurality of pixel position conversion patterns and the controller transmits, through the communicating section to the imaging device, a signal for instructing the imaging device to switch the pixel position conversion pattern.

16. A program product to be read by a computer of a device for controlling an imaging device including a wide-angle high distortion optical system having an optical characteristic that an image of an object is projected in larger magnification in the central area of the image than in a peripheral area and that distortion is larger in the peripheral area than in a central area of the image formed by the optical system; and image capturing section for capturing the image formed by the optical system, the program product comprising instructions of:

taking a picture of a predetermined area and waiting for appearance of an specified object in a stand-by mode; and

tracking and taking a picture of the specified object which appears in the predetermined area, generating a central image data representing an image of the central area of the image projected on the image capturing section by the optical system.

17. A program product according to claim 16 further comprising an instruction of extracting the central image data and an image data representing at least a part of the image in the peripheral area in the stand-by mode such that an image of a wide area is formed.

18. A program product according to claim 16 further comprising instructions of detecting a specified object based on the image data generated by the image data generating section in the stand-by mode, and switching the operation mode of the imaging device to the close-observation mode when the specified object is detected.

19. A program product according to claim 15 further comprising an instructions of switching the operation mode of the imaging device to the stand-by mode when a predetermined ending condition is satisfied in the close-observation mode.

20. A program product according to claim 15 further comprising an instructions of transmitting data of the image of the central area to a display device connected with the imaging device, and causing the display device to display the image of the

central area.

21. an imaging device comprising:

a wide-angle high distortion optical system having an optical characteristic that an image of an object is projected in larger magnification in the central area of the image than in a peripheral area and that distortion is larger in the peripheral area than in a central area of the image formed by the optical system;

an image capturing section for capturing the image data formed by the optical system;

an operation mode control section for controlling the imaging device to operate in a stand-by mode wherein the imaging device monitors relatively wide area of a scene to be monitored and operate in a close-observation mode wherein the imaging device monitors an object while tracking the object, and

an image data generating section for generating, in the close-observation mode, a central image data representing an image of the central area of the image projected on the image capturing section by the optical system.